

Form 159 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.: IMM1P007A Applicant: Louis B. Rosenberg et al. Filing Date: June 5, 1995	Serial No.: 08/461,170 Group: 2609
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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
<i>JB</i>	A	5,143,505	09/01/92	Burdea et al.	414	5	02/26/91
<i>JB</i>	B	4,800,721	01/31/89	Cemenska et al.	60	393	02/13/87
<i>JB</i>	C	4,907,970	03/13/90	Meenen, Jr.	434	45	03/30/88
<i>JB</i>	D	4,907,973	03/13/90	Hon	434	262	11/14/88
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Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>JB</i>	1	Jacobsen, S.C. et al., "High Performance, High Dexterity, Force Reflective Teleoperator II," ANS Topical Meeting on Robotics & Remote Systems," Albuquerque, New Mexico February 24-27, 1991, pp. 1-10.
<i>JB</i>	2	Kotoku, Tetsuo et al., "Environment Modeling for the Interactive Display (EMID) Used in Telerobotic Systems," IEEE November 3-5, 1991, pp. 99-1004.
<i>JB</i>	3	Bejczy, Antal K., "The Phantom Robot: Predictive Displays for Teleoperation with Time Delay," IEEE 1990, pp. 546-550.
Examiner	<i>Jeffrey A. Brian</i> Date Considered <i>4/29/96</i>	

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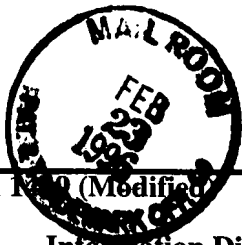
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	O							
	P							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
JB	4	Buttolo, Pietro et al., "Pen-Based Force Display for Precision Manipulation in Virtual Environments," IEEE March 1995, pp. 1-8.
JB	5	Tan, Hong Z. et al., "Human Factors for the Design of Force-Reflecting Haptic Interfaces," Tan, Srinivasan, Eberman, & Chang, ASME WAM 1994, pp. 1-11.
JB	6	Ellis, R.E. et al., "Design and Evaluation of a High-Performance Prototype Planar Haptic Interface," ASME December 3, 1993, DSC-Vol. 49, pp. 55-64.
Examiner <i>J. A. Brien</i>		Date Considered <i>4/29/96</i>

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Form 100 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No.:	Serial No.:
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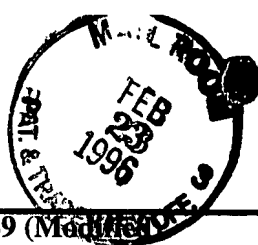
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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>JB</i>	7	Adelstein Bernard D. et al., "A High Performance Two Degree-of-Freedom Kinesthetic Interface," Massachusetts Institute of Technology 1992, pp. 108-112.
<i>JB</i>	8	Colgate J. Edward et al., "Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces, September 22, 1993.
<i>JB</i>	9	Iwata, Hiroo et al, "Volume Haptization, IEEE 1993, pp. 16-18.
Examiner <i>Jeffrey A. Brien</i>		Date Considered <i>4/29/96</i>

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
JB	10	Fischer, Patrick et al., "Specification and Design of Input Devices for Teleoperation," 1990.
JB	11	Burdea, Grigore et al., "Distributed Virtual Force Feedback," IEEE, May 2, 1993, pp. 25-44.
JB	12	Rosenberg, Louis B., "The Use of Virtual Fixtures as Perceptual Overlays to Enhance Operator Performance in Remote Environments," Air Force Material Command, September 1992, pp. 1-42.
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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>gfb</i>	13	Rosenberg, Louis B., "The Use of Virtual Fixtures to Enhance Operator Performance in Time Delayed Teleoperation", Crew Systems Directorate Biodynamics and Biocommunications Division Wright-Patterson, Air Force Material Command, March 1993, pp. 1-45.
<i>gfb</i>	14	Burdea, Grigore et al., "A Portable Dextrous Master with Force Feedback," <u>Presence: Teleoperators and Virtual Environments</u> , MIT Press, June 1991.
<i>gfb</i>	15	Rosenberg, Louis B. et al., "Perceptual Decomposition of Virtual Haptic Surfaces," IEEE, October 1993.
Examiner <i>Jeffrey A. Birn</i>		Date Considered <i>4/29/96</i>

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Form 0449 (Unmodified)	Atty Docket No.: IMM1P007A	Serial No.: 08/461,170
Information Disclosure Statement By Applicant	Applicant: Louis B. Rosenberg et al.	Group: 2609
(Use Several Sheets if Necessary)	Filing Date: June 5, 1995	

U.S. Patent Documents

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	O							
	P							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
JB	16	Rosenberg, Louis B., "Virtual Fixtures as Tools to Enhance Operator Performance in Telepresence Environments," SPIE Telemanipulator Technology, 1993.
JB	17	Rosenberg, Louis B., "Virtual Haptic Overlays Enhance Performance in Telepresence Tasks," SPIE 1994.
JB	18	Burdea, Grigore et al., "Dextrous Telerobotics with Force Feedback-An Overview," Robotica 1991, Vol. 9.
Examiner	Jeffrey A. Brian	
	Date Considered/ 4/29/96	

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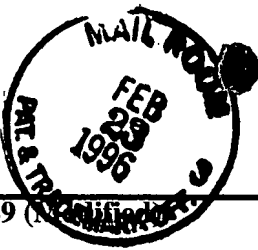
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Other Documents

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<i>JB</i>	19	Colgate, J. Edward et al., "Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces," 1993, pp. 1-9.
<i>JB</i>	20	Yamakita, M. et al., "Tele-Virtual Reality of Dynamic Mechanical Model, IEEE July 7-10, 1992, pp. 1103-1110.
<i>JB</i>	21	Adlestein, Bernard D. et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control Research," 1992, pp. 1-24.
Examiner <i>Jeffrey A. Briner</i>		Date Considered <i>4/29/96</i>

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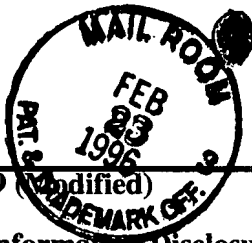
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Other Documents

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JB	22	Ouh-young, Ming et al., "Force Display Performs Better than Visual Display in a Simple 6-D Docking Task," IEEE 1989, pp. 1462-1466.
JB	23	Kim, Won S. et al., "Graphics Displays for Operator Aid in Telemanipulation," IEEE 1991, pp. 1059-1067.
JB	24	Hannaford, Blake et al., "Performance Evaluation of a Six-Axis Generalized Force-Reflecting Teleoperator," IEEE May/June 1991, Vol. 21, No. 3, pp. 620-633..
Examiner <i>Jeffrey A. Brier</i>		Date Considered <i>4/29/96</i>

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
f13	25	Kim, Won S. et al., "A Teleoperation Training Simulator with Visual and Kinesthetic Force Virtual Reality", Human Vision, Visual Proceedings, Proc. SPIE 1666, San Jose, CA, Feb. 1992.
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